

1. Each butterfly egg is surrounded by a hard outer shell, called the chorion, to protect the developing larva. The shell is lined with a layer of wax, which helps keep the egg from drying out. Each egg has one to many tiny funnel-shaped openings at one end, called micropyles. Since eggs get their hard shell before they are fertilized, this hole, which penetrates all the way through the shell, allows sperm to enter. The raised areas on an egg shell are called ridges. They are formed inside the female before she lays the egg. Butterfly and moth eggs vary greatly in shape.

2. Larvae have three distinct body parts. They have a head, and a body with a thorax and an abdomen. The head has a pair of very short antennae, mouthparts (upper lip, mandibles, and lower lip), and six pairs of very simple eyes, called ocelli. Even with all of these eyes, the caterpillar's vision is poor. The antennae help to guide the weak-eyed caterpillar and the maxillary palps, which are sensory organs, help direct food into the larva's jaws.

3.

When it pupates, a Monarch larva splits its exoskeleton and wiggles out of its larval skin. When this skin moves far enough down the body, the cremaster appears. The cremaster is a spiny appendage at the end of the abdomen. The Monarch hooks its cremaster into a silk pad spun by the larva just before pupation; it will hang from this until it emerges as an adult. The freshly exposed pupa is very soft and delicate until it hardens. You can see many different body parts on the pupa, including the wings, abdomen, legs and eyes.

4. The body of an adult butterfly is divided into the same major parts as the larva-head, thorax, and abdomen. There are four main structures on the adult head: eyes, antennae, palpi, and proboscis.

A butterfly's relatively enormous compound eyes are made up of thousands of ommatidia [\[SEM photo \(21 K\)\]](#) each of which senses light and images. The two antennae and the two palpi, which are densely covered with scales, sense molecules in the air and gives butterflies a sense of smell. The straw-like proboscis is the butterfly's tongue, through which it sucks nectar and water for nourishment. When not in use, the butterfly curls up its proboscis [\[SEM photo \(13 K\)\]](#)